

FORM PTO-1449
(Rev. 2-32)U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

00-714-G

Serial No.

09/830,620

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

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TC 1700

Applicant:

Chad A. Mirkin, et al.

Filing Date:

November 30, 1999

Group:

TBA

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation Yes No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

24	1.	Brada, et al., "Golden Blot" – Detection of Polyclonal and Monoclonal Antibodies Bound to Antigens on Nitrocellulose by Protein A-Gold Complexes, <i>Analytical Biochemistry</i> , Vol. 42, pp. 79-83 (1984) U.S.
	2.	Dunn, et al., "A Novel Method to Map Transcripts: Evidence for homology between an Adenovirus mRNA and Discrete Multiple Regions of the Viral Genome, <i>Cell</i> , Vol. 12, pp. 23-36, (1997) U.S.
	3.	Hacker, "High performance Nanogold – Silver in situ hybridisation, <i>Eur. J. Histochem</i> , Vol. 42, pp. 111-120 (1998) U.S.
	4.	Ranki, et al., Sandwich hybridization as a convenient method for the detection of nucleic acids in crude samples, <i>Gene</i> , Vol. 21, pp. 77-85 (1983) U.S.
24	5.	Romano, et al., "An antiglobulin reagent labelled with colloidal gold for use in electron microscopy," <i>Immunochemistry</i> , Vol. 11, pp. 521-522 (1974) Great Britain

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Robert H. H. H.

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2-8-04

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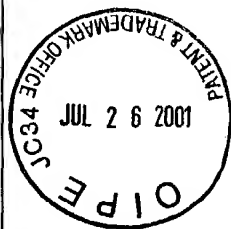
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RH	1.	5,599,668	02/04/97	Stimpson, et al.			
RH	2.	5,990,479	11/23/99	Weiss, et al.			

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		Document Number	Date	Country	Class	Subclass	Translation Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

RH	3.	Stimpson, et al., "Real-time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," <i>Proc. Natl. Acad. Sci.</i> , Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S.
	4.	Storhoff, et al., "Strategies for Organizing Nanoparticles into Aggregate Structures and Functional Materials," <i>Journal of Cluster Science</i> , Vol. 8, No. 2, pp. 179-217, Plenum Publishing Corporation (1997) U.S.
	5.	Storhoff, et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes," <i>J. Am. Chem. Soc.</i> , Vol. 120, pp. 1961-1964, American Chemical Society (1998) U.S.
	6.	Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, American Chemical Society (1999) U.S.
RH	7.	Zhu, et al., "The First Raman Spectrum of an Organic Monolayer on a High-Temperature Superconductor: Direct Spectroscopic Evidence for a Chemical Interaction between an Amine and Yb ₂ Cu ₃ O _{7-δ} ," <i>J. Am. Chem. Soc.</i> , Vol. 119, pp. 235-236, American Chemical Society (1997) U.S.

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12H	8.	Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," I. Theory, <i>Analytical Biochemistry</i> , Vol. 262, pp. 137-156 (1998) U.S.
12H	9.	Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," II. Experimental Characterization, <i>Analytical Biochemistry</i> , Vol. 262, pp. 157-176 (1998) U.S.

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1.	Alivisatos, A. P., et al., "Organization of 'nanocrystal molecules' using DNA," <i>Nature</i> , Volume 382, p. 609-611 (1996)
2.	Bazin, H., et al., "Peptide and biotin-oligonucleotide-pyrrole conjugates for electrochemical addressing on silicon chip," <i>Nucleosides Nucleotides</i> , Volume 18, p. 1309-1310 (1999)
3.	Bidan, G., et al., "Electropolymerization as Versatile Route for immobilizing Biological Species onto Surfaces," <i>Appl. Biochem. Biotechnol.</i> , 89, 183-193 (2000)
4.	Braun, E., et al., "DNA-templated assembly and electrode attachment of a conducting silver wire," <i>Nature</i> , Volume 391, p. 775-778 (1998)
5.	Caruana, D. J., et al., "Enzyme-amplified amperometric detection of hybridization and of a single base pair mutation in an 18-base oligonucleotide on a 7-um-diameter microelectrode," <i>Journal of the American Chemical Society</i> , Volume 121, p. 769-774 (1999)

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EXAMINER <i>Robert Hand</i>	DATE CONSIDERED <i>2-8-09</i>
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RH	6.	Cassell, A. M., et al., "Assembly of DNA/Fullerene Hybrid Materials," <i>Angewandte Chemie International Edition in English</i> , Volume 37, p. 1528-1531 (1998)
	7.	Davies, D. I., et al., "Addition of Thiols to some 5-Substituted Norborn-2-enes," <i>Journal of the Chemical Society, Perkin Transactions. 1</i> , p. 433-8 (1973)
	8.	Elghanian, R., et al., "Selective colormetric detection of polynucleotides based on the distance-dependent optical properties of gold nanoparticles," <i>Science</i> , Volume 277, p. 1078-1080 (1997)
	9.	Kelly, S. O., et al., "Single-base mismatch detection based on charge transduction through DNA," <i>Nucleic Acids Research</i> , Volume 27, p. 4830-4837 (1999)
	10.	Korri-Yousoufi, H., et al., "Toward bioelectronics specific DNA recognition based on an oligonucleotide-functionalized polypyrrole," <i>Journal of the American Chemical Society</i> , Volume 119, p. 7388-7389 (1997)
RH	11.	Livache, T., et al., "Polypyrrole DNA chip on a silicon device: example of hepatitis C virus genotyping," <i>Analytical Biochemistry</i> , Volume 255, p. 188-194 (1998)

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PM	12.	Livache, T., et al., "Preparation of a DNA matrix via an electrochemically directed copolymerization of pyrrole and oligonucleotides bearing a pyrrole group," <i>Nucleic Acids Research</i> , Volume 22, p. 2915-2921 (1994)
	13.	Mirkin, C. A., et al., "A DNA-based method for rationally assembling nanoparticles into macroscopic materials," <i>Nature</i> , Volume 382, p. 607-609 (1996)
	14.	Napier, M. E., et al., "Probing biomolecule recognition with electron transfer: electrochemical sensors for DNA hybridization," <i>Bioconjugate Chemistry</i> , Volume 8, p. 906-913 (1997)
	15.	Niemeyer, C. M., "Self-assembled nanostructures based on DNA: towards the development of nanobiotechnology," <i>Current Opinion in Chemical Biology</i> , Volume 4, p. 609-618 (2000)
	16.	Niemeyer, C. M., et al., "Supramolecular Nanocircles consisting of streptavidin and DNA," <i>Angewandte Chemie International Edition in English</i> , Volume 39, p. 3055-3059 (2000)
PM	17.	Niemeyer, C. M., et al., "Covalent DNA-Streptavidin conjugates as building blocks for novel biometallic nanostructures," <i>Angewandte Chemie International Edition in English</i> , Volume 37, p. 2265-2268 (1998)

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21	18.	Posner, G. H., et al., "A Mechanistic and synthetic study of organocopper substitution reactions with some homoallylic and cyclopropylcarbonyl substrates application to isoprenoid synthesis," <i>Tetrahedron</i> , Volume 32, p. 2281-2287 (1976)
	19.	Schwab, P., et al., "A series of well-defined metathesis catalysts synthesis of [RuCl ₂ (=CHR')(PR ₃) ₂] and its reactions," <i>Angewandte Chemie International Edition in English</i> , Volume 34, p. 2039-2041 (1995)
	20.	Shchepinov, M. S., et al., "Oligonucleotide dendrimers: stable nano-structures," <i>Nucleic Acids Research</i> , Volume 27, p. 3035-3041 (1999)
	21.	Storhoff, J. J., et al., "One-pot colorimetric differentiation of polynucleotides with single base imperfections using gold nanoparticle probes," <i>Journal of the American Chemical Society</i> , Volume 120, p. 1959-1964 (1998)
	22.	Storhoff, J. J., et al., "Programmed Materials Synthesis with DNA," <i>Chemical Reviews</i> , Volume 99, p. 1849-1862 (1999)
21	23.	Taton, T. A., et al., "Scanometric DNA array detection with nanoparticle probes," <i>Science</i> , Volume 289, p. 1757-1760 (2000)

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EXAMINER <i>Robert H. Hall</i>	DATE CONSIDERED <i>2-8-04</i>
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RM	24.	Trnka, T. M., et al., "The development of L2X2Ru=CHR olefin metathesis catalysts: an organometallic success story," <i>Accounts of Chemical Research</i> , Volume 4, p. 18-29 (2001)
	25.	Watson, K. J., et al., "DNA-Block copolymer conjugates," <i>Journal of the American Chemical Society</i> , Volume 123, p. 5592-5593 (2001)
	26.	Watson, K. J., et al., "Hybrid Nanoparticles with block copolymer shell structures", <i>Journal of the American Chemical Society</i> , Volume 121, p. 462-463 (1999)
	27.	Yu, C. J., et al., "Electronic detection of single-base mismatches in DNA with ferrocene-modified probes," <i>Journal of the American Chemical Society</i> , Volume 123, p. 11155-11161 (2001)
RM		

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RH	1.	5,312,940	05/17/94	Grubbs, et al.	556	136	04/03/92
	2.	5,342,909	08/30/94	Grubbs, et al.	526	171	08/13/93
	3.	5,468,819	11/21/95	Goodall, et al.	526	171	11/16/93
	4.	5,569,730	10/29/96	Goodall, et al.	526	282	11/15/94
	5.	5,606,085	02/25/97	Bell, et al.	556	57	10/05/95
	6.	5,639,900	06/17/97	Bell, et al.	556	57	12/29/93
	7.	5,677,405	10/14/97	Goodall, et al.	526	281	05/24/95
	8.	5,571,881	11/5/96	Goodall, et al.	526	171	06/07/95
	9.	5,710,298	01/20/98	Grubbs, et al.	556	22	08/30/96
	10.	5,728,785	03/17/98	Grubbs, et al.	526	142	07/02/96
	11.	5,728,917	03/17/98	Grubbs, et al.	585	653	10/30/95
	12.	5,731,383	03/24/98	Nubel, et al.	525	297	09/03/96
	13.	5,741,869	04/21/98	Goodall, et al.	526	171	06/07/95
RH	14.	5,780,565	07/18/98	Clough, et al.	526	206	11/28/95

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PH	15.	5,750,815	05/12/98	Grubbs, et al.	585	511	08/29/96
	16.	5,808,126	09/15/98	Brzezinska, et al.	556	431	09/03/97
	17.	5,811,515	09/22/98	Grubbs, et al.	530	330	05/29/96
	18.	5,831,108	11/03/98	Grubbs, et al.	556	21	07/31/96
	19.	5,840,820	11/24/98	DeSimone, et al.	526	169	06/06/95
	20.	5,849,851	12/15/98	Grubbs, et al.	526	93	11/13/97
	21.	5,916,983	06/29/99	Pederson, et al.	526	170	05/27/97
	22.	5,880,231	03/09/99	Grubbs, et al.	526	171	10/26/95
	23.	5,917,071	06/29/99	Grubbs, et al.	556	21	11/07/97
	24.	5,922,863	07/13/99	Grubbs, et al.	540	538	10/26/95
	25.	5,939,504	08/17/99	Woodson, Jr. et al.	526	145	12/02/96
	26.	5,969,170	10/19/99	Grubbs, et al.	556	21	05/23/97
	27.	6,020,443	02/01/00	Woodson, et al.	526	135	02/06/97
PH	28.	6,040,363	03/21/00	Warner, et al.	523	214	09/04/98

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RM	29.	6,048,993	05/11/00	Grubbs, et al.	556	21	02/19/99
	30.	6,060,570	05/09/00	Nubel, et al	526	308	08/07/97
	31.	6,071,459	06/06/00	Warner, et al.	264	311	09/04/98
	32.	6,080,826	06/27/00	Grubbs, et al.	526	75	12/08/97
	33.	6,107,237	08/22/00	Wagener, et al.	502	240	07/08/98
	34.	6,107,420	08/22/00	Grubbs, et al.	526	73	07/26/99
	35.	6,111,121	08/29/00	Grubbs, et al.	556	21	01/15/98
	36.	6,121,473	09/19/00	Schrock, et al.	556	57	02/19/98
	37.	6,143,851	11/07/00	Nubel, et al.	526	308	03/29/00
	38.	6,156,692	12/05/00	Nubel, et al.	502	155	04/24/97
	39.	6,159,890	12/12/00	Nubel, et al.	502	155	10/28/98
	40.	6,211,391	04/03/01	Grubbs, et al.	556	21	09/20/99
	41.	6,232,482	05/15/01	Schwab, et al.	556	21	5/8/00
RM	42.	6,225,488	05/01/01	Mukarjee, et al.	556	22	04/02/99

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RH	43.	6,284,852	09/04/01	Lynn, et al.	526	171	10/29/98
	44.	6,271,315	08/07/01	Kiessling, et al.	525	326.1	06/17/99
	45.	6,288,197	09/11/01	Youngs, et al.	528	25	04/27/99
	46.	6,291,616	09/18/01	Kiessling, et al.	526	171	06/17/99
	47.	6,310,121	10/30/01	Woodson, Jr., et al.	524	32	08/07/98
	48.	6,323,296	11/27/01	Warner, et al.	526	171	02/28/00
	49.	6,342,621	01/29/02	Mukerjee, et al.	556	21	01/27/00
	50.	6,346,652	02/12/02	Schrock, et al.	585	643	07/13/98
RH	51.	6,348,551	02/19/02	Fürstner, et al.	526	171	10/15/99

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2-8-04

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FORM PTO-1449
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U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

00-714-G

Serial No.

09/830,620

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

Applicant:

Chad A. Mirkin, et al.

Filing Date:

08/15/01

Group:

1713

U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
RH	1.	5,830,986	11/03/98	Merrill, et al.	528	332	10/28/96
	2.	5,900,481	05/04/99	Lough, et al.	536	55.3	11/06/96
	3.	6,203,989	03/20/01	Goldberg, et al.	435	6	03/25/99
	4.	6,251,303	06/26/01	Bawendi, et al.	252	301.4R	09/18/98
	5.	6,277,489	08/21/01	Abbott, et al.	428	403	12/04/98
	6.	6,306,610	10/23/01	Bawendi, et al.	435	7.1	09/17/99
	7.	6,361,944	03/26/02	Mirkin, et al.	435	6	06/25/99
	8.	6,365,418	04/02/02	Wagner, et al.	436	518	05/18/00
RH	9.	6,417,340	07/09/02	Mirkin, et al.	536	23.1	10/20/00

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		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
RH	10.	WO 93/25709	23 December 1993	PCT				
	11.	WO 98/04740	5 February 1998	PCT				
	12.	WO 98/17317	30 April 1998	PCT				
	13.	WO 99/60169	25 November 1999	PCT				
	14.	WO 00/33079	8 June 2002	PCT				
RH	15.	WO 01/00876	4 January 2001	PCT				

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FORM PTO-1449 (Rev. 2-32)	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 00-714-G	Serial No. 09/830,620
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		Applicant: Chad A. Mirkin, et al.	Filing Date: 08/15/01
		Filing Date: 08/15/01	Group: 1713

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate

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RH	16.	WO 01/51665	19 July 2001	PCT				
	17.	WO 01/73123	4 October 2001	PCT				
	18.	WO 01/86301	15 November 2001	PCT				
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	20.	WO 02/18643	7 March 2002	PCT				
	21.	WO 02/36169	10 May 2002	PCT				
	22.	WO 02/46483	13 June 2002	PCT				
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RH	24.	Letsinger, R., et al., "Chemistry of Oligonucleotide-Gold Nanoparticle Conjugates," <i>Phosphorus, Sulfur and Silicon</i> , Volume 144, p. 359-362 (1999)
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FORM PTO-1449
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

RH	26.	Li Z., et al., "Multiple thiol-anchor capped DNA-gold nanoparticle conjugates," <i>Nucleic Acids Research</i> , Volume 30, p. 1558-1562 (2002)
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RH	2.	5,641,515	06/24/97	Ramtoola	424	189	06/07/95
RH	3.	5,705,196	01/16/98	Galan Valdivia, et al.	424	497	09/21/94

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		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

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INFORMATION DISCLOSURE
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Applicant:

Chad A. Mirkin, et al.

Filing Date:

November 30, 2001
~~April 20, 2001~~

Group:

TBA

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate

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Document Number	Date	Country	Class	Subclass	Translation Yes No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

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Chad A. Mirkin, et al.

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March 30, 1999
April 20, 2004

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U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
RH	1.	5,609,907	03/11/97	Natan	X	X	
I	2.	6,025,202	02/15/00	Natan			
RH	3.	6,149,868	11/21/00	Natan			

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							Yes	No

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Chad A. Mirkin, et al.

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RH	1.	5,609,907	03/11/97	Natan			
L	2.	6,025,202	02/15/00	Natan			
RH	3.	6,149,868	11/21/00	Natan			

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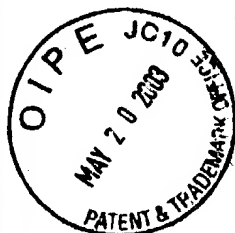
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Chad A. Mirkin, et al.

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August 15, 2001

Group:

1713

U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
RH	1.	4,996,143	02/26/91	Heller, et al.	435	6	04/13/90
	2.	5,508,164	04/16/96	Kausch, et al.	435	6	10/29/93
	3.	5,922,537	07/13/99	Ewart, et al.	435	6	11/8/96
	4.	5,972,615	10/26/99	An, et al.	435	6	01/21/98
	5.	6,264,825	07/24/01	Blackburn, et al.	205	777.5	06/23/99
RH	6.	6,214,560	04/10/01	Yguerabide, et al.	435	7.1	04/18/97

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RH	7.	WO 94/29484	12/22/94	PCT				
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RH	9.	Mohanty J., et al. "Pulsed laser excitation of phosphate stabilized silver nanoparticles," <i>Proc. Indian Acad. Sci.</i> , Vol. 112, No. 1, p. 63-72.					
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